

## **A two stage analysis of recreation conflict as a basis for management strategies in the Black Forest: a methodological contribution**

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### **Abstract**

The scientific inputs to management of recreation areas in Germany have been largely determined by ecologically oriented quantitative impact and conflict studies with an emphasis on nature protection. Today, however, Germany's recreational situation has changed. New activities and increased participation by people seeking different recreational experiences challenge management in many areas. Apart from ecological problems, social conflicts occur between and within user groups and land management agencies. At the same time there is a lack of understanding of the leisure differences that might lead to conflict, and at times wrong management decisions. This study presents a methodological contribution to more accurately capture the interactions between recreational activity management and conflict-based user group perceptions. This was tested in the Northern/Central Black Forest Nature Park on six nature sport groups. A two stage model was used for each group that starts with a quantitative conflict survey and is qualitatively validated and interpreted by intra- and inter-group experts. This paper discusses this methodological approach with results from two groups: hikers and mountain bikers, and shows how an integrated conflict analysis model might be used to better explain recreational conflicts in the light of geographic or cultural differences, rapid social change, and their consequences for today's recreation planning and management.

Keywords: conflict analysis, methodological integration, triangulation, user group conflict, social world, recreation planning

## **1 Introduction**

In Germany, nature sport and outdoor recreation activities gained societal importance in the last four decades. The effect on the land is noticeable: high recreational pressure and a general diversification of recreational demands leads to ecological and social impacts in some areas, especially where there is a limited suitable natural landscape close to urban or densely populated areas. Concomitantly management issues have become more complex. Since the 1970s, the scientific inputs to management in the field of outdoor recreation have been largely ecologically oriented, and mainly quantitative with an emphasis on nature protection.

Impacts due to infrastructural developments (e.g. SCHMIED *et al.* 2002; PETERMANN 1998; WEIGER 1982), damage to flora (e.g. SEIBERT 1983), fauna (e.g. FISCHER and HAHNKE 1994; FECKER *et al.* 1982), water (e.g. BfN 1997) and air (e.g. OPASCHOWSKI 1999) are well documented. These and other studies have surveyed the main leisure activities and quantified

many ecological impacts, e.g., for hiking (e.g. BRÄMER 2000; VOLK *et al.* 1995); mountain biking (e.g. JACOB *et al.* 2002; WÖHRSTEIN 1998), horse back riding (e.g. AMMER and TITZE 1980), climbing (e.g. DAV 1998) and skiing (e.g. PETERMANN 1998; JOB 1991; VOLK 1986). Most studies have concluded that the carrying capacity of nature and recreational landscapes is limited and that careful visitor flow management is needed to achieve sustainable recreational development and use. Recreation management is therefore largely a spatial and temporal problem of the distribution of recreationists in nature. Besides general improvements to the site or sport infrastructure, sometimes managers choose to concentrate usage in some parts of an area in order to protect ecologically more sensitive ones (ROTH 2000).

An observable effect today is that multifunctional use of forest roads reduces ecological impacts elsewhere, but engenders social conflicts between user groups who have to share the same infrastructure (DSB 2001; AUBE 2002). On average 25 % of hikers and mountain bikers refer to occasional conflict situations; other studies show 40 % or more conflict perception between the user groups (e.g. BRÄMER 2002; OPASCHOWSKI 1999, 1997). Attempts to reduce conflicts through legal restrictions and use regulations, like defined minimum paths widths for activities like cycling or horse back riding, have often failed, and conflict potentials between user groups still exist (FROITZHEIM 2002). The main reason for user group conflicts doesn't seem to be just a question of space and quantity of others but of social values, expectations, and different demands or preferences of diverse user groups (e.g. ABSHER and LEE 1981; MANN 2006).

In forestry, the existence of diverse motives and preferences structures is recognised. Over the past decades, a wide spectrum of classifications has been developed with help of qualitative approaches to describe different types of forest visitors (e.g. BRAUN 1998; ELSASSER 1996; LOESCH 1980; AMMER and LUTZ 1972; BICHLMAIER 1969). Accompanying this, the understanding of landscape planning has changed too (ALBERS 1993). With regards to recreation and tourism, planning approaches turned from top-down procedures towards process-oriented, cooperative management forms, especially those that include public participation (PRÖBSTL 2004; SPLITTER *et al.* 2000). The active incorporation of diverse interests, and planning for area development and management by explicitly defining overall concepts and area-specific objectives (e.g. PRÖBSTL and FRANK-KRIEGER 1996), has become more common. Round tables (e.g. MAYERL 1996; KAULE *et al.* 1994) and task groups (e.g. v. HAAREN 1994) have gained increasing importance as planning instruments in order to search for suitable conflict solutions.

Thus, reliable information on recreation conflict is seen as a necessary precondition for an effective and efficient recreation planning system in the light of recent societal changes and leisure trends (e.g. PRÖBSTL 2000; MAYER and WILDBURGER 1998). Quantitative measurements of recreation can provide a baseline for planning and management to see how use patterns and resource conditions are changing. Additional qualitative information about users' conflict perceptions can help to get a deeper insight into conflict reasons and options for handling them. Ideally, recreation conflict data is an integrated combination of quantitative and qualitative information in order to improve the overall validity of data, to increase the quality of information, and to accurately reflect the "real world problem" to decision makers. This paper presents a two stage conflict analysis model as an instrument to gain deeper insight into conflict perceptions, following the idea of an integrated methodological approach.

## 2 Materials and methods

In order to present the proposed two stage conflict analysis approach, an analysis scheme is needed to guide the recreation conflict survey.

### 2.1 Understanding conflict: a theoretical orientation

First, the recreationists' social world can be represented by two major groups of pre-experience attributes: activity factors and motives. Our starting point is the recreation conflict theory by JACOB and SCHREYER (1980). Their idea is that conflicts are likely to occur if someone's behaviour directly or indirectly interferes with someone else's goal achievement. The theoretical model consists of four social-psychological conflict factors describing a recreationist's sensitivity to conflict.

The factors relate to recreationists attachment to the resource (resource-specificity), their involvement in a recreation activity (activity-style), the ways they perceive and experience the environment (mode of experience) and their tendency to accept or reject lifestyles different from one's own (tolerance) (GRAEFE and THAPA 2004: 210). For work in Germany, Jacob and Schreyer's model was modified and extended. A fifth factor of "expectations" was added. This element is derived from customer service and recreational crowding literatures. It functions as a reference point for a comparison with the experienced recreation situation (e.g. ABSHER and LEE 1981; BUDRUK *et al.* 2002; FREDMAN and HÖRNSTEN 2001).

Second, the model incorporates motive factors that are crucial to understanding conflict perceptions. This aspect suggests that value-orientations and their resulting motives are fulfilled (or not) by a recreational stay (e.g. OPASCHOWSKI 1997). Especially apropos are individual hedonistic and idealistic values that have been shown to be central to leisure research (e.g. PETERMANN 1998). In surveys, motives are generally more accessible to the recreationist than values, and thus have a clearer link to recreation and leisure outcomes. As such, motives represent direct inducements for behavior (SCHWARZ 2000). In the theoretical model (Fig. 1) 19 single motives from the German conflict literature (e.g. BRAUN 1998; FEIGE and FEIL 1997) were clustered into four groups and represent the diverse motivations that exist in today's nature sports. These four are meditation/balance; social/activity; nature/body and enjoy/explore.

Together, the five activity factors and four motive groups encapsulate the recreationists' "social world" that exists prior to a recreational stay (pre-experience). The next phase of the recreation experience is on-site impacts. These were evaluated with help of justification-questions and acceptability statements to gauge the infrastructure, other visitors and forest management (post-experience). Additional questions were included to assess how pre-experience and on-site conditions might have affected respondent's satisfaction, visitor reactions and management preferences (Fig. 1).

The adequacy of this conflict analysis model was tested with two hypotheses:

- 1) The sensitivity to conflicts can be better described by an activity-specific combination of factors and motives.
- 2) A two stage methodological approach helps to better understand recreation conflicts by describing user group's social worlds in the context of management decisions.

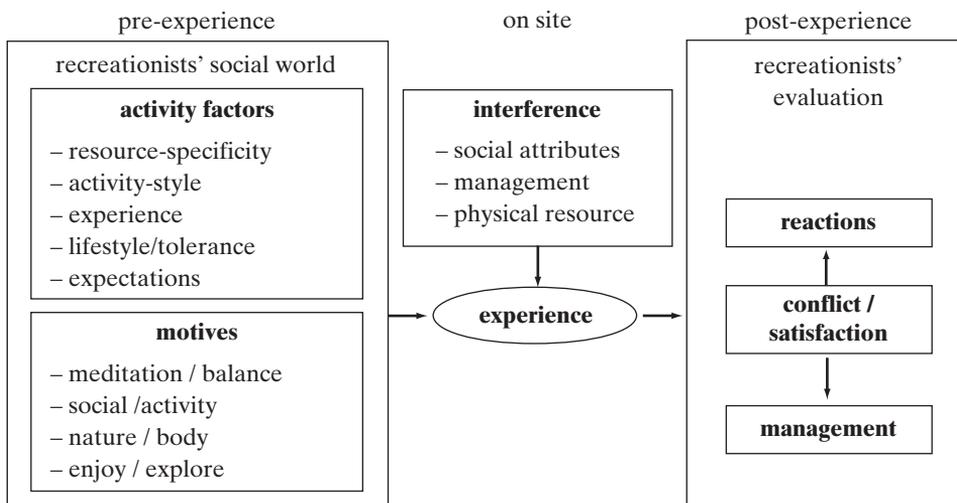


Fig. 1. The conflict analysis model.

## 2.2 Methodological approaches

To operationalize the recreation conflict model, the Northern/Central Black Forest Nature Park, located in southwest Germany, was chosen as a study site. The Nature Park boundaries served as boundaries of the recreation system to be studied. As described above, the systematic analysis of recreation conflict potentials from a “social worlds” perspective frames this research design. Our assertion is that two methodological approaches, a quantitative and a qualitative procedure, can be integrated and used complementarily to achieve greater explanatory power in this situation.

While quantitative procedures provide evidence in a deductive way following general principles or universal statements, and are based in work done elsewhere or previously, a qualitative approach is more inductive, oriented towards a specific group, place or time, and draws on the unique or individual incident’s characteristics (MAYRING 2003; ATTESLANDER 2000; DENZIN and LINCOLN 1998). As a result, inductive and deductive approaches might be viewed as incompatible scientific approaches (MEINEFELD 2000).

But this is not necessarily true. Because each approach has its own strengths and weaknesses, attempts are being made to combine the two methodologies and link the results of each in ways that are mutually supportive (BORTZ and DÖRING 1995; DIEKMANN 2000; KELLE and ERZBERGER 2000). Within this integration, two major approaches can be distinguished (MAYRING 2001). One is a “phased” model which combines independent quantitative and qualitative approaches temporally. The other approach is a “triangulation” model which employs both approaches to assess an object from different yet clearly interdependent perspectives (KELLE 1999). This approach relies on the two as different, but coequal, procedures with the same overall goal of obtaining valid results, and that each contributes uniquely to the ascertainment, description, or understanding of a subject area (FICHTEN and DREIER 2003; FLICK 1998, 1991).

This study presents a triangulative methodological design with two viewpoints. First is a quantitative-empirical part that is used to describe and analyze nature sport users and their social structures, and second is a qualitative step that validates and refines the first. The

general phenomenon “nature sport” which is first described through a quantitative investigation appeared appropriate in order to generate a cross-sectional profile of the different uses and users. But it is both difficult and unnecessary to compile a whole region “nature sport” sample, so a purposive sample was drawn. The sampling for each park or group stops when sample sizes are large enough for statistical descriptions of a group’s key attributes, which in this case are those related to conflict perceptions (WIEDEMANN 1991). Contacts were formed through nature sport clubs and organizations that are found in the Nature Park in order to obtain a diversified sample of activity-groups (MANN 2003). Included were traditional nature sport activities like hiking, cycling and horse back riding as well as newer trends like jogging/walking, mountain biking and hang gliding (Zwischenbericht Naturparkplan 2002).

Actual data collection used various compatible techniques, depending upon the activity, the group structure and the expected demography of the members. The distribution of questionnaires took place either through postal, email/online (mountain bikers) or through member magazines (horse back riders). The data collection took place in July to November 2003.

The questionnaire primarily consists of questions related to conflict determinants and conflict measures: 20 of the 39 questions addressed determinants of five conflict factors (resource-specificity, activity-style, mode of experience, tolerance and expectations). The selection of conflict determinants is derived from United States conflict studies (e.g. WARZECHA *et al.* 2001; STEWART and COLE 1999; SCHNEIDER 1996; WATSON *et al.* 1993). The 20 most significant variables suitable to the Nature Park context were included in the questionnaire.

Conflict measurements referring to the elements of the recreation system (Fig. 1) were also included. Consistent with the US literature crowding was measured with two 9-Point-Likert-Scales that asked visitors to evaluate an area’s visitor density the last time they visited it and on average if they have been to this area more often. The scale goes from “not crowded at all” to “way too crowded” where every answer larger than five (crowded – way too crowded) was treated as a social disturbance. Also, three summative 4-Point-Likert-Scale conflict measures, presented as item batteries, were used, covering potential impacts caused by the infrastructure, forest management and social attributes. A filter question asked first if an impact was encountered in that area, and if yes, answer possibilities range from “very much disturbed” to “not disturbed at all”. Altogether 28 scaled items plus one additional open-ended question originate from recent German and American recreation conflict literature (SCHEMEL and ERBGUTH 2000; SCHMIED *et al.* 2002; AUbE 2002; FROITZHEIM 2002; SCHUSTER and HAMMITT 2001; WATSON 2001; OPASCHOWSKI 1999; COLE *et al.* 1997).

Another type of conflict measure, in accordance to the goal interference model by JACOB and SCHREYER (1980), asked whether they had encountered any disturbing visitor behaviour during the recreational experience. If the answer was “yes”, people were asked to specify that behaviour and the activity group. One more conflict measure asked for a rating of overall satisfaction with the recreational experience. A 6-Point-Likert-Scale based on the familiar German school grading system was used. People answering in the highest categories (4–6) were counted as visitors who had some conflict perceptions. The six conflict measures compose a thematic and comprehensive evaluation of the recreation situation consistent with the assumption that recreation quality will be diminished by conflict perceptions.

Additionally the questionnaire included 19 recreational motives on a 4-Point-Likert-Scale from “not important” to “very important” that led to four scaled motive groups in the analysis, as well as other variables on visitor reactions, management preferences and socio-demographic information. Altogether the questionnaire items led to five conflict measures, four motive groups and five activity factors.

Group-specific differences were calculated using a path analysis with linear regressions (WRIGHT 1921; LI 1977). The conflict measures are the dependent variables and are regressed on the motive groups and conflict factors. The Beta values (standardised regressions coefficients) measure the influence of a given path on conflict perceptions; while the model's explanatory power is described by the overall regression  $R^2$  values.

In order to better understand conflict perceptions and the nature sport groups' "social worlds" that were identified by the quantitative analysis these findings were qualitatively validated by internal and external nature sport experts. In this second methodological step, the quantitative results were incorporated in interviews as focal questions. The comparability across groups was guaranteed by a predetermined structured interview guideline (BORTZ and DÖRING 1995). A total of 16 problem-centred interviews were used in order to 1) verify the descriptive and social world data; and 2) to deepen the results of the conflict analysis by adding to the explanatory power of the conflict factors and motive groups for each nature sport activity. Depending on the conditions, most of the interviews were carried out as individual face-to-face interviews, although in two cases alternatives were used: a telephone interview and a group interview. The interviews were entered verbatim into a text-based file and analysed electronically using the program MAXqda. A graphic summary of the overall methodological design and information flow is as follows (Fig. 2):

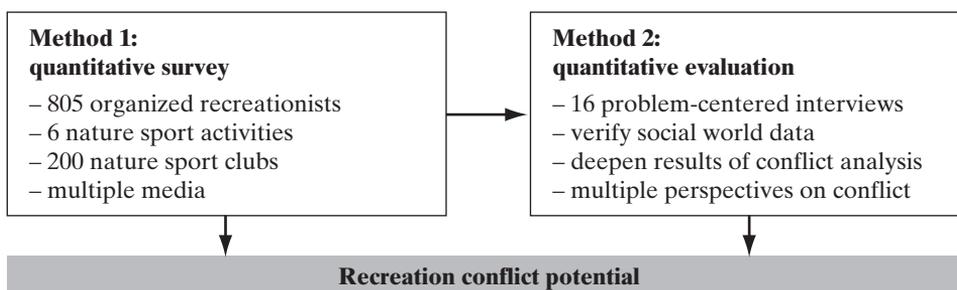


Fig. 2. The 2-step triangulative method for surveyed Black Forest nature sport groups.

### 3 Results

Six nature sport organizations and 200 activity clubs participated in the study. From the 845 returned questionnaires, 805 were useable. In order to make the demonstration of a triangulation methodology manageable we will concentrate on two groups, one traditional and one new activity form: hikers and mountain bikers. These groups are 57 percent of the sample, or 456 individual respondents, with the hikers the largest group in the study (50 % and  $n = 403$ ) and the mountain bikers among the smaller groups for which we had a minimum generalizable sample size (7 % and  $n = 53$ ).

#### 3.1 Socio-demographic characteristics

Table 1 shows the socio-demographic characteristics of these two groups.

The hikers and particularly the activity-oriented mountain bikers are dominated by male participants. Their age is characteristically between 40 and 60 years for the bikers and over 60 years for the hikers. There is also a substantial percentage of younger members (18 to 40 years) within the mountain biking group. There are also differences in education level: the

percentage reporting comprehensive secondary school is much higher within this “younger” group. Overall, the hikers are older and less educated than the mountain bikers, and less male dominated.

Table 1. Socio-demographic characteristics of the activity groups.

nature sport group n (% entire study sample)	hikers 403 (50)	mountain bikers 53 (7)
gender (%)		
male	62	86
female	38	14
age (%)		
<18 years	0	0
18–30 years	2	19
31–40 years	4	17
41–50 years	9	28
51–60 years	25	23
>61 years	61	13
education level (%)		
secondary school	50	34
junior high	28	19
comprehensive secondary	13	36
other graduation	8	11

### 3.2 Results of the conflict analysis

Activity group analysis was done to test for differences in conflict perceptions. As above, two groups were used to demonstrate methodological triangulation. The first step is to present the quantitative findings from a path analytic regression analysis for the nature-oriented group, hikers, and the activity-oriented group, mountain bikers (Tables 2 and 3).

Hikers: The main influences on hikers' conflict perceptions are the factor “resource-specificity,” which positively influences crowding and infrastructure impacts, and the factor “experience” which influences only infrastructure impact perceptions. The positive influence for both variables means that the more connected respondents were to their homeland landscape and the more experienced they are with hiking the more likely they are to perceive disturbances through infrastructure and crowding. Of the four motive groups, two are linked to conflict: nature/body and explore/enjoy have multiple significant paths. The regression coefficients for nature/body are negative, suggesting that those with stronger nature- and body-related motives report less infrastructural and social conflict perceptions. The explore/enjoy motives work the other way: stronger motives leads to greater sensitivity towards disturbances by other user groups (social) and greater disagreement with forest management.

The second major part of the analysis is the “triangulation”, that is the incorporation of qualitative results. The quantitative findings were presented to hiking experts as the second methodological step and these experts were asked for interpretation and comments following an interview guideline.

The group representatives added substantial information. For instance the experts from the Black Forest Hiking Association explained that these clubs are for mainly elderly people, with a strong identification to the local region and its leisure traditions. In cooperation with the Forest Service, many members of this group volunteer to take care for the region's

hiking infrastructure. Thus, the strong quantitative influence of the factor resource-specificity was confirmed and given depth by the experts in the interviews. They further explained that many hiking members are emotionally attached to the resource, which sensitizes them towards impacts like garbage, vandalism, poor paths and too little signing. Especially noted was that those hikers who are responsible for monitoring the condition of the paths often have a strong personal identification with their work and feel individually responsible for the infrastructure. Therefore the influence of a factor describing the attachment to the landscape can help to explain this groups' sensitivity to the infrastructure.

Similarly, the hikers had a significant coefficient for crowding perceptions, with 20 % of the hikers indicated crowding to be a problem. The hiker's attachment to the infrastructure causes negative feelings towards other users who are using "their" infrastructure. Support for this interpretation also comes from the second significant factor, "experience". The experts also explained that the club is traditionally comprised of elderly people who have been members for many years (average was 29 years). In comparison to the other activities they are the recreationists with the longest memberships and most experience with their activity. Because they have a long association with the area they know the infrastructure well, and thus most members are able to compare its use and users in former times and today, creating a high sensitivity towards infrastructural and use conditions. Thus, both conflict factors were confirmed, even magnified in importance, during the interviews.

The quantitative phase found important influences on the surveyed hiker's conflict perceptions. Note that even though the regressions found some effects to be statistically significant, these were generally relatively small in explanatory power and that alone that might have led to some dismissal of important effects.

Mountain bikers: In comparison, the mountain bikers show a different pattern of results than those of the hikers. The same conflict, motive and activity variables were used. But the conflict measures were influenced by other factors: e.g., here, the factor "activity-style" negatively affects mountain bikers' conflict perceptions caused by the infrastructure. This means the less mountain bikers are attached to their activity, the more likely they felt disturbed by the infrastructural design, its facilities and conditions.

"Expectations" is positively associated with three conflict measures: crowding, infrastructure and social conflict perceptions. Expectations seem to have an especially strong connection to the mountain bikers' conflict sensitivity and are linked to crowding, infrastructure and social conflict perceptions. Activity-style influence also adds to the perceptions of infrastructural conflict. For the motive factors it seems that, as before, the motive groups nature/body and social/activity have a negative influence on conflict perceptions (Table 3), notably crowding (2 significant coefficients), and social and forest management as well. These results suggest that mountain bikers are sensitive to crowding and other, non-behavioural, conflict pressures.

Table 2. Path analysis (regression coefficients) for the group hikers.

\* sig .05; \*\* sig .01; \*\*\* sig .000.

conflict measures	motive groups				activity factors					R <sup>2</sup>
	meditation/ balance	social/ activity	nature/ body	explore/ enjoy	resource- specificity	activity- style	experi- ence	toler- ance	expec- tations	
crowding	-.070	.052	.026	.124	<b>.138*</b>	.002	-.020	.008	.074	.057
behavior	.093	-.102	.005	.046	.117	-.020	.050	-.001	.028	.042
infrastructure	-.037	.011	<b>-.132*</b>	.080	<b>.185**</b>	.016	<b>.163**</b>	.019	.084	.070
social	.064	-.068	<b>-.120*</b>	<b>.168**</b>	.077	-.114	-.064	.027	.084	.071
forestry	-.051	-.010	<b>-.143*</b>	<b>.127*</b>	.075	-.043	-.017	.043	.085	.047

Table 3. Path analysis (regression coefficients) for the group mountain bikers.

\* sig .05; \*\* sig .01; \*\*\* sig .000.

conflict measures	motive groups				activity factors					R <sup>2</sup>
	meditation/ balance	social/ activity	nature/ body	explore/ enjoy	resource- specificity	activity- style	experi- ence	toler- ance	expec- tations	
crowding	-.201	<b>-.327*</b>	<b>-.365*</b>	-.121	-.192	-.133	.022	.029	<b>.429**</b>	.335
behavior	.238	-.262	-.203	.169	-.190	-.001	-.065	.116	.160	.271
infrastructure	.029	.120	-.022	.057	.198	<b>-.346*</b>	-.199	.268	<b>.405**</b>	.358
social	.124	-.115	<b>-.385*</b>	.048	.178	-.247	-.168	.159	<b>.371*</b>	.281
forestry	.172	<b>-.343*</b>	-.030	.113	.256	.031	.100	.262	-.066	.329

As with the hikers, following the data analysis, mountain bike experts were asked to comment on and interpret the quantitative findings. They explained that many mountain bikers have a close connection to the region, because of its high relief and otherwise good conditions to bike. Different from hikers, most mountain bikers have a minor emotional attachment to the landscape as evidenced by the lack of influence by the resource-specificity factor. Instead, “activity-style” has some influence. The experts further explained that within the mountain bike scene there are intra-group differences which are reflected in different attachment modes of the members to their activity. It was suggested that bikers around the age group 40+ bike regularly for training purposes. Fewer, mostly younger bikers, ride with more risk as “free riders” or “downhillers”, and each subgroup has a different attachment mode to the activity, depending on the associated lifestyle and the connected motives. The recreation conflict theory assumes that recreationists with a strong activity attachment react more sensitively towards conflict. But the mountain biker sample shows other results: the less a biker is attached to the activity (style), the more sensitive he or she is to infrastructure conflict. The interview partners also asserted that it was well known that mountain bikers, who train on a regular basis, also know the recreation situation well. They are aware where to go and which situation fits their needs. The interviewees added that most experienced bikers maintain a relaxed posture with respect to most conflict situations. Thus it is possible to account for the lack of conflict perceptions due to the factor “experience”. The mountain biker interviewees also explained that: the clearer and more focused a biker’s expectation is, the more a biker reacts if expectations are not met. The conflict perceptions in the regression are further explained by knowing that it is the combination of the two factors: the expectations from someone who seldom bikes are usually high and the recreational situation has to fit to their leisure demands. If expectations are not fulfilled the danger of experiencing conflict is high. Both influences suggest cognitive adjustments to the recreational situation in order to reduce conflict. Again the interpretations of the mountain bikers’ conflict perceptions are aided greatly by having qualitative information that augments the explanation of factors in the regressions. The two methods function to support one another.

#### 4 Discussion

The triangulative approach was oriented towards the study’s objective to analyse nature groups’ recreation conflict perceptions. Besides the quantitative regression analysis which was based on a new, expanded analysis model, additional interviews were carried out as a second methodological step to elicit the unobserved causes of action for the nature sport groups. Following the two hypotheses, it seems that the combination of factors and motives

used in this study help to better describe recreational conflict, and more importantly, the methodological combination is useful in order to better understand conflict perceptions and nature sport groups' social worlds.

#### 4.1 Results and ability of the conflict analysis model

The conflict factors and motive groups from the quantitative analysis model revealed significant influences on the nature sport groups' conflict perceptions. This is in part a vindication of the existing literature from which these measures were taken. While the factor "resource-specificity" had no influence on the activity-oriented group of the mountain bikers, it influenced the nature-oriented hikers in a significant way (CONFER *et al.* 2000). Also the factor "experience" has an influence on the hiking groups' conflict perceptions. In contrast activity factors such as expectations are important for the mountain bikers. RAMTHUN (1995) had similar results and assumed that other subjective influences play a crucial role to additionally explain the individual attachment to an activity. This was confirmed by the finding that the more distinct mountain bikers "expectations" were the more sensitive they were toward conflict. A similar influence of the factor "expectations" has been found for wilderness backpackers (ABSHER and LEE 1981), canoeists (IVY *et al.* 1992), and hikers and horse-back riders (WATSON *et al.* 1993).

For interpersonal conflicts caused by other visitors, the same factors and combinations apply for both groups, as before with infrastructural conflicts. Considering that conflicts are mostly a manifestation of stress, a familiar and therefore accurately anticipated situation means they are likely to experience a predictable level of stress for which they can prepare, whereas a novel or unknown situation entails less predictable or spontaneous reactions (SCHUSTER and HAMMITT 2000).

The surveyed motive variables also assist the conclusions. Few motives have an influence on conflict perceptions, and they are not necessarily the "typical" ones for a specific nature sport group. For example, motives from the motive group social/activity like "action", "excitement", or "trying new sport activities", are typically important for the activity-oriented mountain bikers. But the more that these motives apply the less the mountain bikers were sensitive to conflict. Only the motive group enjoy/explore has shown an influence on conflict. Information about motives complements the causal relations between the measured conflict and other influencing variables. "Seeing new landscapes" is for most hikers and mountain bikers of high importance. For both of these nature sport groups it is the major single motive out of the motive group explore/enjoy. Does the encountered social recreational situation not fit to the mountain bikers' expectation? Because the visited landscape contradicts their recreational needs, they may respond more sensitively. The hikers can compare a new visited area with a familiar one because of their prior experience and strong attachments to the home landscape and thus react sensitively to changes.

Thus, the conflict analysis model measures the groups' conflict perceptions in a detailed and useful way. The question remains when this analysis model can be used to explain sensitivity towards conflict in a reliable way. Generalizing from this analysis it could be suggested that the explanatory power of the model ( $R^2$ ) rose when the group was more homogenous, like the mountain bikers. A more heterogeneous group, like the hikers, resulted in a lower explanatory power. Generally, the influence of individual conflict factors may vary greatly across groups. The same was observed in American studies (e.g. MANFREDO *et al.* 2004; THAPA and GRAEFE 2003; GIBBONS and RUDELL 1995). Also, differences in the socio-demographic structure of user groups might influence their conflict perceptions (e.g. LOESCH 1980). But, generally speaking, this effect may be minor when compared to motive

or conflict factors. This is, in part, due to the fact that socio-demographics are relatively coarse indicators and effect behaviours consistent with the specificity principle (FISHBEIN and AJZEN 1975).

Overall, the quantitative results demonstrate the strength of previous recreational studies in a general way, and show that the differences between groups can be substantial in their specific conflict perceptions and causes.

#### **4.2 The ability of the triangulation method**

The concept of triangulation pushes the methodological discussion of the past few years back towards the importance of an integration of scientific traditions. Therefore it is necessary to understand when, or how, to use them synergistically and not allow one method to dominate the other (MAYRING 2001).

This study focused on recreational sport groups as they used the Black Forest. Such “situated realities” confront the researcher with concerns over the accuracy and reactivity of the two scientific approaches. There was a duality during the data collection (standardisation vs. openness) and data analysis (statistical vs. interpretative practices). Both methods constitute internally sufficient research approaches (FIELDING and FIELDING 1986). Nonetheless each methodology also has limitations for a full explication of the behaviours being studied (conflict and its causes across diverse groups). Because the quantitative as well as the qualitative approaches are each applicable to a recreational conflict analysis model, a methodological convergence was both possible and desirable.

Different approaches, with their different assumptions, whether complementary or divergent, help to identify weaknesses or unseen results and thereby deepen the explanation of the social realities of the nature sport groups. The research objective is shifted somewhat from a search for “truth” to an emergent understanding lying at the intersection of two analysis perspectives and an expansion of the research enterprise itself by integration of different methodologies (MAYRING 2001).

The social worlds of the nature sport groups originate out of constructions of individuals, where the members interpret their reality and act accordingly to generate their interpretation. The identified crowding problem, as one social conflict, serves as a good example to illustrate how a triangulative approach helped to understand the quantitative conflict measure by qualitative interpretations, which in turn assists the development of new management strategies.

The example of crowding: Many hikers indicate in the questionnaire that they feel disrupted by other visitors. Similarly, some mountain bikers indicate disturbances through hikers. Quantitative evidence of a physical disturbance from the hikers were given depth during the qualitative interviews with the Black Forest Hiking Club. The representative asserted that this conflict is more of a value conflict between the nature sport groups rather than a physical disturbance, based just on the number of mountain bikers. In the specific case of the sampled black forest hikers, the value conflict reported by the elderly age group (60+) may be attributed to a gap between their leisure and recreational world compared to that of younger recreationists.

Additionally, such conflicts may be sustained by an infrastructure that is oriented towards the needs of the hiking club association members. The traditional value orientation of the organised older hikers regarding a comfortable and safe design and a preference for single use hiking tracks is enacted generally onto the areas’ hiking paths. But because the paths are also used by other activity groups, often younger with different goal orientations like the mountain bikers, value conflicts arise. It is hard for the hiking association to accept that an

infrastructure which is voluntarily designed and managed by them doesn't exist only for hikers but must also serve other users. Due to the societal and political influence of the Black Forest Hiking Club, the conflict is also shifted on a political level to engender conflict potentials between the leisure organisations. Current management practices, such as a width-based use regulation on paths therefore does little to reduce the conflict potentials because it doesn't subsume the conflict reasons. Instead, the triangulation methods used here suggest communication strategies might be useful by adjusting groups' expectations and distributing information (e.g. about diversity of users on the paths, codes of behaviours and trail standards) (ZIENER and BRANDENBURG 2007).

The example illustrates that the interview partners and the researcher can work diligently to construct, post hoc, an understanding of the recreation behaviour and the identified conflicts. This means actions and evaluations are reviewed, and interpreted in detail. Ideally, a triangulation methodology relies upon a multiplicity of subjectivities to compare the interim interpretations and assess their validity prior to making firm conclusions. Following USHER (1996) a consensus arises not despite, but because of, differences which had to be realized and reflected, especially while "reconstructing" peoples' social worlds. There is no methodological dogma for this type of work but this study suggests that, depending on the research objective and scientific interest, quantitative as well as qualitative methods can be used in a way to equalize each method's disadvantages by the other's advantages.

Independent from the methods, the goal of a conflict analysis should be to get a satisfactory explanation of meanings that serves the ultimate goal of nature park management. The triangulation presented above yielded connections which fit the data and withstood a critical verification. For validation and interpretation purposes, the qualitative approach complemented the quantitative data, especially where uncertainty appeared and/or expert opinions were necessary to access the social milieu of interest.

## 5 Management implications

Based on the triangulative conflict analysis results, a final project workshop with the involved nature sport associations and the Park management was held to develop conflict solving strategies and to strengthen the dialogue between recreational users and managers. The assembled experts represented a wide range of disciplines like nature sport, forestry, farming, nature protection, tourism, communities and the Nature Parks management. In this step the empirical results were shared, and experts asked to support field implementation of solutions. As a result, the Nature Parks management agreed with the other involved groups to function as a future mediator for inter-group conflicts like hikers vs. mountain bikers. As a local institution, it has a durable, local reference to all involved stakeholder groups, and also a municipal-political importance. Due to their role as a moderator and dialogue initiator, problems of recreational uses might be identified and solved in an early stage. The Park management is also able to accommodate expectations of different activity groups in their planning process. Because of a need for allies within the park, the nature sport clubs as well as landowners have been suggested as management partners. Old attitudes of entitlement and protest behaviour may be reduced in the organized nature sport sector due to such collaborative planning activities.

Also communication with the non-organised sector (e.g., visitors from the general population) may be easier for land management authorities by interacting with key activity groups. Chances are that as non-organised recreationists share activity preferences and social norms with the organized groups and thus their rights and conflict perceptions will be to some degree taken into account in the Park.

Conflicts will never be fully eliminated, but will always arise between and within different user groups. By their nature, they point out differences in the interests and values of actors, and they are to be seen as an important reflection of societal development. Using a combination of methodological constructs in order to generate statistical baselines, together with periodic and carefully-focused qualitative “real world” reality checks, decision makers will be closer to ecologically and socially compatible strategies for guiding a sustainable and dynamic recreation system.

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